

## Ruthenium(II) diamine complexes incorporating azoimine ancillary ligands. Synthesis, spectral, crystal structure and DFT calculations and catalytic activity in the hydrogenation of $\alpha,\beta$ -unsaturated aldehyde

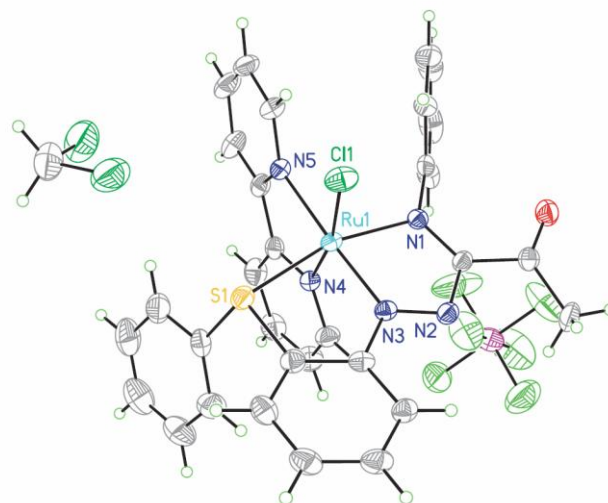
Mousa Al-Noaimi<sup>a</sup>, Ayman Hammoudeh<sup>b</sup>

<sup>a</sup>Department of Chemistry, Hashemite University, P.O.Box 150459, Zarqa-13115-Jordan

<sup>b</sup>Department of Chemistry, Yarmouk University, Irbid, Jordan.

### Abstract (300 word limit)

Six ruthenium complexes bearing phenylazo-(2-(phenylalkyl))phenylmethine ligands of the general type  $[\text{Ru}^{\text{II}}(\text{bpy})(\text{L})(\text{Cl})_2]\text{PF}_6$  (C1-C6) {L = (2-SR) $\text{C}_6\text{H}_4\text{N}=\text{NC}(\text{COCH}_3)=\text{NC}_6\text{H}_4\text{X}$ , L1, C1, X = H, R = Ph; L2, C2, X = CH<sub>3</sub>, R = Ph; L3, C3, X = F, R = Ph; L4, C4, X = NO<sub>2</sub>, R=Ph; L5, C5, X = H, R=CH<sub>3</sub>; L6, C6, X = H, R=H} and  $[\text{Ru}^{\text{II}}(\text{phen})(\text{L1})(\text{Cl})]\text{PF}_6$  (C7) have been synthesized. The crystal structures for C1 is reported and show that the ligands are bind to ruthenium centres as NN'S tridentate ligands. Furthermore, these complexes have been characterized through spectroscopic (IR, UV/Vis. and NMR) and electrochemical (CV) techniques. The redox properties and electronic excitations in the complex are interpreted by DFT and TDDFT calculations. Catalytic activity for the hydrogenation of  $\alpha,\beta$ -was investigated



### Recent Publications (minimum 5)

1. Mousa Al-Noaimi, Ayman Hammoudeh, Firas F. Awwadi, Raja Bader, Amal Mahmoud, *inorganica chimica, acta*, 471(2018) 186–193
2. Mousa Al-Noaimi, Firas F. Awwadi, Bara Atallah, Deeb Taher, Ayman Hammoudeh, Heinrich Lang, Tobias Ruffer, *Polyhedron*, 123 (2017) 47-55
3. Mousa Al-Noaimi, Ayman Hammoudeh, Mohammad El-khateeb, Firas F.Awwadi, Deeb Taher, Ahmad Mansi, Obadah S. Abdel-Rahman *inorganic chemical acta*, 454 (2017) 222 - 228
4. Mousa Al-Noaimi, Firas F. Awwadi, Raiid Al-Razagg, Fatima T. Esmadi, *Synthesis, Crystal Journal of Molecular Structure*, 1125(2016) 464–469
5. Mousa Al-Noaimi, Ismail I. Fafous, Firas F. Awwadi, Deeb Taher, Abdallah Alfayyoumi, Obadah S. Abdel-Rahmand *transition metal chemistry* 41 (795–805) 2016

### Biography



Author has her experience Synthesis and physical characterization of organometallic metal complexes and Design complexes with suitable oxidation potential to oxidize some organic substrates.

Email: [manoaimi@hu.edu.jo](mailto:manoaimi@hu.edu.jo)